

~~SECRET~~
~~Security Information~~

Revised
Jan. 1954

OFFICE OF TRAINING (SPECIAL)

DIRECTIVE

COURSE: INSTRUCTOR TRAINING

SUBJECT: Principles of Learning HOURS: 50 min.

25X1 METHOD OF PRESENTATION: L, D&S, C INSTRUCTOR:

OBJECTIVES OF INSTRUCTION:

To acquaint student with learning process;

To show the student how the principles of learning apply to instruction.

25X1

SUMMARY OF PRESENTATION:

OR INSTRUCTED BY 907

SUBJECTS WITH WHICH COORDINATION IS REQUIRED:

25X1

REFERENCES: "Study Assignment: Principles of Learning" "Principles of Learning";
"Application of the Principles of Learning to Adults."

25X1

REMARKS:

25 YEAR RE-REVIEW

TAB

-2-

B. Demonstration and Discussion

35

1. Discuss questions and examples presented by students in following sequence:
 - a. Sensory Perception - Ideas reach the mind through senses.
 - b. Motivation - Efficient learning takes place when the student is motivated.
 - c. Learn by doing - The most effective way of learning is by doing.
 - d. Readiness - Efficient learning takes place when the student is ready to learn.
 - e. Association - New learning is best acquired by building on what the student already knows.
 - f. Repetition - Effectiveness of learning is normally determined by the individual's ability to recall or recognize factual data, processes, solutions or concepts.
 - g. Effect - A selection process occurs in which the individual tends to acquire and repeat those actions which lead to success and satisfaction.
2. Handout "Application of the Principles of Learning to Adults" - Discuss its implications to our instruction.

II. Critique

10

- A. Give over-all view of the lesson noting its application to the remainder of the course.
- B. Ask students to analyze and comment on correct or incorrect methods of instruction used during the lesson.

Total time

50

TAB

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Instructor Training Course

Lesson Plan

Title : Principles of Learning

50 minutes

Objectives : 1. To acquaint student with learning process
2. To show the student how the principles of learning apply to instruction

References : "Study Assignment: Principles of Learning"
[redacted] "Principles of Learning"; [redacted]
pars. 51-53
"Application of the Principles of Learning to Adults."

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Training Aids : Venetian blind stand; card charts of Learning Principles

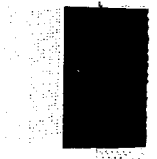
I. Presentation

A. Introduction

1. Lecture

a. Tell students:

- (1) They are to learn the fundamentals of learning as they apply to all individuals
- (2) That as future instructors they will understand how to apply these principles to their instruction
- (3) That a discussion will be held based on the questions and examples they formulated from the requirements on the student assignment
- (4) An additional reference will be distributed later in the lesson
- (5) That a critique will give students opportunity to comment on method of instruction used in this class



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PRINCIPLES OF LEARNING

Learning demands activity by the student. He must do the acquiring and the responding. It is for this reason that emphasis is placed on the statement that the student does the learning and that the instructor guides and expedites the learning process. If the instructor is to achieve these two ends, guiding and expediting, he must understand first, what the student needs to learn, and second, how the student learns. What the student is to learn is determined by the objectives of the course. How the student is to learn is determined by the instructor.

The instructor determines how the student will learn a given subject by considering the background knowledge of the student, the nature of the subject matter, and the principles by which learning is expedited. Considering these factors, the instructor formulates a general concept of the learning steps through which the student will need guidance in acquiring the specified understanding. By application of the principles under which learning is facilitated or expedited, the instructor then refines and develops these steps into a specific learning program for the subject at hand. This is the instructional plan. Once he has satisfied himself as to this program, he can easily establish his job of teaching, which is the obverse of the learning process. The instructor, therefore, uses these principles of learning to formulate a program by which the student will learn the subject matter of the unit, and by which the instructor will guide the student in the process.

In the study of the learning process, psychologists have treated the subject in a profound way. It is not the purpose here to expound their many personal theories. Our aim is simply to outline some fundamental principles in the learning process which have common acceptance.

1. Ideas reach the mind through the senses.

It is important to note, however, that not all of the impressions picked up by the senses reach the mind. All of us know that often we look at charts, or hear words without their making any impression. "In one ear and out the other" gives clear expression of this fact. Ideas registered or mentally recorded through the senses are done so in varying degrees of intensity. The fact learned may be simply recorded as a fact or it may be related to others, or applied to actual or imaginary situations. The instructor's job is to assist the student to recognize, retain, and use these ideas to the extent required in each particular case. This job is complicated by the fact that he must see that correct ideas are registered, correctly processed and retained. He must also make sure that wrong ideas are not retained

as right ones. The senses which are utilized by the normal individual to attain knowledge are:

- a. Sight. The greatest amount of learning comes through the sense of sight. Everyone is aware of the vast amount of knowledge he has gained by reading, by traveling, by observing the action of people, and by looking at pictures, illustrations, diagrams, and animated cartoons.
- b. Hearing. Impressions also come through the sense of hearing and, as a result of the active use of this sense, many special skills are developed. The trained ear of the safecracker can detect the fall of the tumbler in the lock chamber; the sensitive ear of the communications man can determine the "fist" of the sender.
- c. Touch. Use of this sensory mechanism is evidenced by the skilled demolitions trainee who can feel the ribbing and distinguish between detonating cord and time fuse, and by the soldier who, feeling the impact of the rifle against his shoulder, learns the necessity for a solid position.
- d. Smell and Taste. These are used in specialized learning. It is obvious that the baker, the chef, and the professional food taster rely on these senses to perfect their arts. The chemist especially, acquires much knowledge through taste and smell.
- e. Kinesthetic. The kinesthetic sense is the response of major groups of muscles or muscular tension organs to stimuli, usually pressure.

Because the senses are important channels to learning, anyone who is concerned with learning - teacher or student - should appeal to as many senses as possible. If each of these senses is capable of conveying impressions to the mind of the learner, stronger impressions would be received if more than one sense channel were employed. A student who has listened to an instructor describe an industrial area has some information. His elementary knowledge can be supplemented by a film strip or moving picture showing the industrial area. In addition to his having heard and seen the area, a trip through the industry completes a combined appeal to his senses, resulting in more permanent knowledge.

2. Efficient learning takes place when the student is motivated.

Motivation is the very heart of the learning process. It is the why or the what that prompts a student to learn. It is the drive, the force, the stimulus that creates an awareness of the need for knowledge and without which learning is impossible. Adequate motivation not only sets in motion the activity which results in learning but it also sustains and directs learning. Motivation in learning is like the drive of appetite in sustaining life. One type of motivation stems from a natural desire or craving for knowledge.

A need for knowledge is another effective motivating factor. In most cases a great amount of learning results when the students understand the need for that learning. Self-preservation is a normal desire. In order to survive, a soldier, stationed in the Philippines, must obtain information on a band of Huks. His determination to survive intensifies his desire to know as much as possible about the recent movements of his opposition, the leaders, members, weapons, skills, and supply lines. His need for this knowledge is immediate. Consequently, learning is greater. In the case of the soldier who is required to know about the Huks merely for information for some future discussion, or a passing grade, the need is less urgent. His motivation is of a lesser degree. Therefore, his learning is less intense.

A feeling of satisfaction and a sense of achievement are common and effective forms of stimulation. It is a common conviction that a realization of progress drives an individual to further effort. A rifleman who achieves success in a tight shot pattern is stimulated further to improve his skill with the weapon until he attains perfection. An excellent rating on the first week's work is a stimulus to greater effort during the second week, the third week, and the final week. It amounts, in brief, to the adage, "Nothing succeeds like success."

Other sources of motivation include rewards, praise, and the desire for social approval. Most men want to win the approval of friends and superiors. These may not be ideal forms of stimulation but they do have value in promoting learning. The soldier is aware of the possibility of a promotion as a reward for solving a difficult field problem; the child is offered the prospect of a movie if he behaves well; some people are conscious of the element of "saving face." Foreign cultures have motivating forces unknown to most Americans. These motivations, embodied in the social structure, must be understood and utilized by the instructor whose task is to guide the learning of foreign trainees. These incentives are natural ones to which people respond. In most cultures there are artificial incentives which may stimulate learning desires for a brief period. Considering our own culture, we may list:

- a. Awareness that a test is to be given.
- b. Desire to do things quickly and in a straightforward manner.
- c. Conduct oneself to conform with the group attitude.

The over-all, most effective method of motivation is to devise and develop realistic situations which are so meaningful and vital to the student (not to the instructor alone) that he sees the need for learning the subject. Each part of a proposed lesson should be subjected to the test, "Is this the way these students are likely to meet the problem?"

3. The most effective way of learning is by "doing."

This is another way of saying that experience is the best teacher and

that an instructor should take advantage of the well-known fact that an individual learns a vastly higher percentage of the things he does than of the things he hears, reads or sees. It is imperative that the "doing" be correct. Erroneous "doing" results in wrong concepts. The instructor must be sure that the "doing" is right and that the student knows why it is right. There are a great many cases in which the actual "doing" is possible. It is impossible to provide enemy areas, police corps, armies, or foreign industrial areas for the training of students. However, it is possible to draw up situations through problems, charts and maps which depict in a realistic way, events and circumstances the student is likely to encounter and to require the student to evaluate the circumstances and events and make a decision or take an action.

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4. Efficient learning takes place when the student is ready to learn.

Readiness is another major factor in learning. This refers to the mental and physical state of the student, that is, the tone or condition of the learner as he confronts what he is to learn. Readiness refers primarily to willingness, motivation, interest and desire but depends upon the level of maturity of the student and upon previously acquired knowledge and skills. A person's ability is affected by his:

- a. General mental ability (intelligence).
- b. Educational level.
- c. Previous knowledge or skill possessed in relation to specific material to be learned.
- d. Special aptitudes, e.g., mechanical, spatial, verbal, perceptual, speed, kinesthetic sensitivity.
- e. Facility for learning through the eye or the ear.
- f. Attitudes, motivation, and interests.
- g. Past experience with various teaching techniques such as lectures, films, problem solving.

The instructor's responsibility here is to know and understand the facts about his students. Only then can he plan motivating teaching situations in which his students will learn.

5. New learning is best acquired by building on what the student already knows.

Learning means acquiring new understandings. Association is the "stepping stone" process in learning by which new knowledge is built upon that which already is known. Old ideas are foundation blocks for new ideas. This principle is observed by conducting instruction on a progressive basis. In order to learn algebra the student draws on his knowledge of arithmetic. In a mapping problem the student learns to determine magnetic azimuth. To do this he employs his knowledge of reading, geometry, arithmetic, use of the compass, etc. It is not sufficient that the instructor knows that he is building on what the student knows; the student must know it too. In the learning process this relationship is an important factor. The learner should be shown:

- a. Relationship between the present and past teaching in the subject.
 - b. Relationship between the subject and the past experience of the student.
 - c. Relationship between the various points in a given period of instruction.
 - d. Relationship between the current subject and others which have been, or will be, taught.
 - e. Relationship between the subject and its application in the field.
6. Effectiveness of learning is normally determined by the individual's ability to recall or recognize factual data, processes, solutions or concepts.

After the initial steps of learning have been fulfilled, repetition adds to the precision and performance of the skill or application of concepts. The student is not likely to learn the subject thoroughly unless he has applied what he is taught to differing situations.

Applications vary with the type of knowledge concerned. Sometimes the applications of abstract knowledge (theory) are not readily apparent in practical work. But when the knowledge concerns procedures or skills, the necessary application, obviously, is to do the job. Actually, the application is part of the learning process. Hence, we speak of learning by "doing." The progress of learning will depend upon the frequency of repetition under favorable conditions (motivation, effect, etc.). It is the instructor's responsibility to involve the students in several learning situations which will provide opportunities to utilize their

newly acquired knowledge under varying conditions. This is repetition.

In examining the different ways of learning, experiments have shown the following results:

- a. In learning by meaningless repetition (learning of this sort occurs when the material is repeated for the sole purpose of retaining it, without the student's understanding of the facts or principles concerned - sometimes called rote), the individual concerned could recall or recognize only 45% of the information after 6 days.
- b. In learning by insight, integration and usefulness, the individuals concerned could recall or recognize 90% of the information after 8 months.

It is obvious, that requiring the student to learn by meaningless repetition is very ineffective (except for low physical skills) and should be held to a minimum in any learning situation. It is therefore a responsibility of the instructor to present clearly not only the facts of the situation or problem but also their relationships as an integrated whole.

7. A selective process occurs in which the individual tends to acquire and repeat those actions which lead to success and satisfaction.

This principle is known as the law of effect. Students tend to avoid responses which are unsuccessful or annoying. For the fullest utilization of this principle, the instructor must provide learning opportunities with which his students can cope, and which help the learner confirm his successes in his own mind.

Summary. Irrespective of facilities, conditions, and circumstances, the extent of your learning depends on your own mental or physical activities. Demonstration of a well-designed piece of instructional equipment does not assure that you will learn. Whether you learn from such a demonstration depends on what takes place within you. You must react to it before learning has occurred. You must see it, understand it, be able to make applications of it, and prove your ability to use it before you have learned.

Likewise, if you hear a well-prepared lecture delivered by a capable speaker, it does not mean that you have learned. But if you hear the lecture, understand it, and make specific applications of it under various circumstances, you can be sure that you have learned.

It is important that those who will become instructors as well as those who will become learners be acquainted with these essentials. More important, however, is that these principles be applied.

APPLICATION OF THE PRINCIPLES OF LEARNING TO ADULTS

Although much of the literature on learning is referenced directly to the teaching of children, it has been established that the basic principles which you have read are equally applicable to adults. In fact their application to adults can be made with even greater clarity of purpose and result. Studies by Thorndike and others regarding the educability of adults gave impetus and scientific basis to the surge of adults toward self-improvement. These studies revealed that the inhibitions many adults had about their power to grow and ability to learn were groundless. Adults can learn almost as well as they could as children. While there are some decreases in efficiency of sensory equipment during later years of adult life, there are also additional qualifications for effective learning, namely, intensity of clarity, interests and incentives.

The most important goal of any instruction is to prepare the student to meet and solve his problems. This is referred to frequently as "teaching how to think" or "how to reason." Regardless of definition, preparing the individual to organize and utilize all of his capacities in any situation is the final objective of instruction. The teaching of this process through use in our instructional programs is an important objective.

If the solution of problems constitutes one of the important aspects of human existence it will be profitable to review what psychologists believe is the "reasoning" or "thinking" process applied by adults to these problems. This examination will show why it is necessary to give a large place in any instructional program to a method of teaching that will not neglect this process and will enable the student to increase his ability to solve problems.

The "reasoning" or "thinking" process.

1. Psychologists agree that thinking starts with a problem or "felt difficulty." Whatever it is, it is a "problem," because the habitual ways of reacting to that situation have been unsatisfactory.
2. The next requirement is that the existence of the problem be recognized and its nature defined clearly and concisely. Many people are only vaguely aware that a perplexity exists. They bring no frontal attack upon it, because they fail to see and define it clearly.
3. When the problem is defined, a possible solution or hypothesis must be formulated. This hypothesis is usually a mixture of what is known (experience and training) and new meanings suggested by the imagination.

4. When the hypothesis is proposed, all of its factors are examined critically to appraise or assess their significance to that hypothesis. All possible consequences of the hypothesis are "thought out." A proposed solution found wanting must be cast aside and new ones formulated and examined until one is found that offers reasonable promise of success.

5. Finally, the proposed solution and the reasoned-out relationships are applied. The results of the first experience in applying the solution may reveal new problems or phases of this problem heretofore unknown. Again, these will require the application of the reasoning process. Recognizing that this pattern is likely to be the one followed by students in their study and approach to instruction, an instructor must strive to organize his instruction and apply the principles of learning within the framework of the reasoning process.

STUDY ASSIGNMENT: PRINCIPLES OF LEARNING

References.

Read the paper entitled "Principles of Learning".

Work assignment.

After reading the paper, prepare a brief outline of the principles which are explained in the paper. Illustrate one of the principles with an example of how you have applied it in your teaching.

Discussion assignment.

Prepare a list of questions on any points in the reading material that you did not understand. Think over all of the principles as they relate to teaching adults in this organization.

TAB

Principles of Learning

Bibliography

1. Cole and Bruce - Educational Psychology, 1950.
2. Commins, W.D., - Principles of Educational Psychology, 1937.
3. Dewey, John - How We Think, 1933.
4. Essert, Paul - Creative Leadership of Adult Education, 1951.
5. Thorndike, Edward L., - Adult Learning, 1928.
6. Sheats, Joyce and Spence, - Adult Education, 1953.

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Instructor Training Course

Lesson Plan

Title: : Principles of Learning

50 Minutes

Objectives : 1. To acquaint student with learning process
2. To show the student how the principles of learning apply to instruction

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References : "Principles of Learning;" FM 21-5, page 5

Training Aids: Film strip: "I Want to Learn" U.S. Navy
Projectionist; Film strip projector; Blackboard

I. Presentation

A. Introduction (Motivation) Lecture

5

1. Fundamentals of learning as they apply to all individuals
2. As future instructors they will understand how to apply these principles to their instruction
3. A film strip will be shown on the basics of learning - the strip emphasizes four particularly
4. During the film strip questions for discussion will be considered relative to these fundamentals and their application in the field
5. A critique will give students opportunity to comment on the method of instruction used in this class

B. Demonstration and Discussion

35

1. Show film strip, "I Want to Learn" NOTE: Film was made for instructors in U. S. Navy
2. Develop through film strip and discussion 5 major laws of learning:
 - a. Motivation
 - b. Sensory perception
 - c. Readiness
 - d. Association
 - e. Repetition
3. Clarify, show, and explain importance of each of the above through stimulated discussion

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I. Critique

1. Give over-all view of the lesson; discuss strong points
clarify any phases not completely understood
2. Students will analyze and comment on correct or incorrect
methods of instruction used during the lesson

Total Time 50

Minutes

10

Lesson on Learning

As future instructors in the field you must:

- Give thought to the ones you are to teach
- Understand that each trainee is your responsibility
- Treat him as an individual
- Know his aims and how they relate to the aims of the course
- How much and how fast he can learn

Before the student is receptive to any instruction what must be done?

Which is the better way to explain each step of the instruction (or in presenting new material to the student)

What motivating factors would you add to those already mentioned in the reading?

How can you make a learning situation real or alive?

In presenting instruction to foreign groups on what factor (s) of learning would you lay emphasis? Why?

Student Evaluation

Lesson: Principles of Learning

The effectiveness of any instructional program is measured by the amount of learning gained by the student. The knowledge acquired by him is affected by the instructor's use of varied methods and materials in his instruction.

In an attempt to evaluate the instructional program, will you kindly answer the following questions in relation to the instruction: Principles of Learning.

1. Do you think this block of instruction is necessary in an instructor-training course?
2. Did the instruction meet the objective and the need?
3. Discuss the instructional method used and its effectiveness?

7-40, 2071

PRINCIPLES OF LEARNING

Learning is the acquisition of knowledge. It is an active, continuous process which begins at infancy when one learns the difference between something and nothing and continues from that basic knowledge to the deeper "whys" and "hows." It is a process performed by the individual himself. Others may guide his learning but the acquisition of knowledge is something which is done by him. Some learning may be gained through organized direction, by parents, teachers, employers and others. It may be acquired at church, at home, through the press, from the radio, perhaps on the athletic field. A sizeable measure may be gathered spontaneously as the individual is confronted with new situations. It may be acquired slowly and with some difficulty or it may be acquired rapidly and easily. Whatever the degree or the quality, learning is a process performed by the individual and his mind functions according to a definite pattern of mental laws. Learning does not "just happen."

In the study of the learning processes, psychologists have treated the subject in a profound way. It is not the purpose here to expound their many personal theories. Our aim is simply to outline some fundamental principles in the learning process which have common acceptance. The following ~~Six~~ principles will be considered: motivation, sensory perception, readiness, association, repetition and affect.

1. Motivation. Motivation is the very heart of the learning process. Motivation is the why or the what that prompts a student to learn. It is the drive, the force, the stimulus that creates an awareness of the need for knowledge, and without which, learning is impossible. Adequate motivation not only sets in motion the activity which results in learning but it also sustains and directs learning. Motivation in learning is like the drive of appetite in sustaining life. One type of motivation stems from a natural desire, or craving, for knowledge. Curiosity itself is an innate stimulative.

A need for knowledge is another effective motivating factor. Where the need is clear and understood, there is in most cases, a great amount of learning. Self-preservation for example, is a perfectly normal desire. In order to survive, a soldier, stationed in the Philippines, must obtain information on a band of Huks. His determination to survive identifies his desire to know as much as possible about the recent movements of the Huks, their leaders, members, weapons, skills, and supply lines. His need for this knowledge is immediate; consequently, learning is greater. In the case of the soldier who is required to know about the Huks merely for information for some future discussion, or perhaps, for passing an examination, the need is less urgent. His motivation is of a lesser degree; therefore his learning is less intense.

A feeling of satisfaction and a sense of achievement are common and effective forms of stimulation. It is a common conviction that a realization

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of progress drives an individual to further effort. A rifleman who achieves success in a tight shot pattern is stimulated further to improve his skill with the weapon until he attains perfection. An excellent rating on the first week's work is a stimulus to greater effort during the second week, the third week, and so on, to the last week. It amounts, in brief, to the adage, "Nothing succeeds like success."

Other sources of motivation include rewards, praise, and the desire for social approval. Most men want to win the approval of friends and superiors. These may not be ideal forms of stimulation, but they do have value in promoting learning. The soldier is aware of the possibility of a promotion as a reward for solving a difficult field problem; the child is offered the prospect of a movie if he behaves well; some people are conscious of the element of "saving face"; and so on. Foreign cultures have motivating forces unknown to most Americans. These motivations, which are embodied in the social structure, must be understood and utilized by the instructor whose task it is to guide the learning of foreign trainees. These incentives, for the most part, are natural ones to which all people respond. In most cultures there are artificial incentives which may stimulate learning desires for a short period. Some examples of these in our own culture are:

- a. Awareness that a test is to be given.
 - b. Desire to do things quickly and in a straight-forward manner.
 - c. Conduct oneself to conform with the group attitude.
2. Sensory Perception. There is some difference of opinion on the number of senses of the individual. Most authorities agree on the following classifications at least. These senses are utilized by the normal individual to attain knowledge.
- a. Sight. The greatest amount of learning comes through the sense of sight. Everyone is aware of the vast amount of knowledge he has gained by reading, by observing the actions of people, looking at pictures, illustrations, diagrams, animated cartoons, and even by observing the mountains and the sky.
 - b. Hearing. Impressions also come through the sense of hearing and, as a result of the active use of this sense, many special skills are developed. The trained ear of the safecracker can detect the fall of the tumbler in the lock chamber; the sensitive ear of the communications man can determine the "fist" of the sender.
 - c. Touch. Another artery of knowledge is the sense of touch. Use of this sensory mechanism is evidenced by the skilled demolitions trainee who can feel the ribbing and distinguish between detonating cord and time fuse, and by the soldier who, feeling the impact of the rifle against his shoulder, learns the necessity for a solid position.

- d. Smell and Taste. These are used in more specific learning. It is obvious that the baker, the chef, and the professional food tester rely on these senses to perfect their art. The chemist especially, acquires much knowledge through taste and smell.
- e. Kinesthetic. The kinesthetic sense is the response of major groups of muscles or muscular tensions organs to stimuli, usually pressure.

Since the senses are important channels to learning, it can be said that anyone who is concerned with learning--teacher or student--should appeal to as many senses as possible. If each of these senses is capable of conveying impressions to the mind of the learner, it is logical to conclude that stronger impressions would be received if more than one sense-channel were employed. A student who has heard a teacher describe Niagara Falls has some information. His elementary knowledge can be supplemented by a film strip showing the Falls. In addition to his having heard and seen the wonder, a boat trip through the mist completes a combined appeal to his senses, resulting in more permanent knowledge.

3. Readiness. Readiness is another major factor in learning. This refers to the mental and physical state of the student, that is the tone or condition of the learner as he confronts what he is to learn. Readiness depends upon the level of maturity of the student and upon previously acquired knowledge and skills. A person's ability is affected by his:

- a. General mental ability (intelligence).
- b. Educational level.
- c. Previous knowledge or skill possessed in relation to specific material to be learned.
- d. Special aptitudes, e.g., mechanical, spatial, verbal, perceptual, speed, kinesthetic sensitivity.
- e. Facility for learning through the eye or the ear.
- f. Attitudes, motivation, (meaningfulness) and interests.
- g. Past experiences with various teaching techniques such as lectures, films, problem solving, etc.

Good learning cannot be forced. The trainee is said to be teachable when he is ready to learn. If the student is ill, his learning efficiency will decline. Other factors may also interfere. The subject, at times, will be difficult to learn. This may be due to a poor design or planning of the subject matter by the instructor. If learning can be postponed until such time as these distractions or conditions have been eliminated, there will be greater understanding. In some cases, children instill fear in the learner, and, although he may understand the need for knowledge, this fear is so great that little or no learning takes place. Emotional imbalance deters learning, and until the student's attitude changes, little knowledge can be realized. Proper guidance

and effective motivation are necessary at this time. In general, the factors leading to failure are the same for all peoples. Cultural patterns of foreign peoples however, must be studied carefully in order to avoid ineffective instruction caused by a disregard of their customs and prejudices.

4. Association. Association is the "stepping-stone" process in learning, by which new knowledge is built upon that which already is known. Old ideas are foundation blocks for new ideas. In order to learn algebra the student draws on his knowledge of arithmetic. In a mapping problem the student learns to determine magnetic azimuth. In order to do this he employs his previously acquired knowledge of reading, direction, geometry, and arithmetic. In the learning process this relationship is an important factor. The greater the tasks to be learned, the more learning takes place. The learner should be shown:
 - a. The relationship between the various points in a given period of instruction.
 - b. The relationship between present and past teaching in the subject.
 - c. The relationship between the current subject and others which have been, or will be, taught.
 - d. The relationship between the subject and its application in the field.
 - e. The relationship between the subject and the past experience of the student.
5. Repetition. The effectiveness of learning is normally determined by the individual's ability to recall or recognize factual data, processes, solutions, or concepts. After the initial steps of learning have been fulfilled, repetition adds to the precision and performance of the skill or handling of concepts. However, other things being equal, the progress of learning will be dependent upon the frequency of repetition under favorable conditions (motivation, effect, meaningfulness etc.) Students learn by doing. It is the instructor's responsibility to involve the students in several learning situations which will provide the student opportunities to utilize his newly gained knowledge under varying conditions. This is repetition. In examining the different ways of learning, experiments have shown the following results:
 - a. In learning by meaningless repetition (learning of this sort occurs when the material is repeated over and over again for the sole purpose of retaining it, without any understanding of the facts or principles concerned - sometimes called rote) the individuals concerned could recall or recognize only 45% of the information after 6 days.
 - b. In learning by insight, integration and usefulness, the individuals concerned could recall or recognize 90% of the information after 8 months.

It is quite obvious then, that requiring the student to learn by meaningless repetition is very ineffective and should be held to a minimum in any learning situation. It is therefore, a responsibility of the instructor to present clearly, not only the facts of the situation or problem but also their relationships as an integrated whole.

6. Effect. According to this principle of learning a selective process occurs in which the individual tends to acquire and repeat those actions which lead to success and satisfaction. He tends to avoid responses which are unsuccessful or annoying. For the fullest utilization of this principle, the instructor must provide learning opportunities with which his students can cope, and which help the learner confirm his successes in his own mind.

Summary. The learning process is a continuous activity of a living thing, the mind. Learning does not merely happen. It is the result of several fundamentals: motivation, sensory perception, readiness, association, repetition, and effect. These can be either the source of new knowledge or contributing factors to the degree or permanence of knowledge.

It is important that those who will become instructors as well as those who will become learners be acquainted with these essentials. More important however, is that these principles be applied.

Lesson Plans

Title: TRAINING FILM: "Accent on Learning"

Time Required: 50 min.

Objective: To show students the importance of the principles of learning and teaching as applied to instruction.

References:

Training Aids: Film--- "Accent on Learning"
PROJECTOR, PROJECTIONIST

I. Presentation

A. Introduction

5 min.

1. Tell students:

- a. they will see a film, "Accent on Learning"
- b. that as future instructors it will be necessary for them to link the principles of learning and teaching so as to insure successful instruction
- c. that this film illustrates the essentials
- d. that a critique will give students an opportunity to comment on the instruction

B. Demonstration

1. Show film Accent on Learning

35 min.

II. Critique

A. Review major points of film

B. Students comment on this film as a method of instruction---

1. Time of presentation
2. Effectiveness of the film

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PRINCIPLES OF LEARNING

Do you ever wonder about the process of learning? Do you ever consider how the mind of a child becomes the mind of a man? This development is the learning process--a process which goes on continuously. It is an active process. It is not a matter of passive absorption. Learning begins with infancy when, for example, having struck your head on the side of your crib, you learned the difference between something and nothing. Since then you have gone from basic knowledge to the deeper why's and how's. Learning is the acquisition of knowledge. It is something which you do. Others do not do it for you; they may guide your learning, but you acquire the knowledge yourself. You gain some of your knowledge through organized direction by your parents, your teachers, and your employer, and, perhaps, some of it through self-directed effort. You acquire knowledge in church, at home, from the radio, or on the athletic field. You gather a sizeable measure of it spontaneously as you are confronted with new situations. You may acquire a greater portion of your knowledge slowly and with some difficulty, or, perhaps, you learn rapidly and easily. Whatever the degree or quality, you do the learning, and, in doing so, your mind functions according to a definite pattern of mental laws. Learning does not just happen.

In the study of the learning processes, psychologists have treated the subject in a profound way. It is not the purpose here to expound their many personal theories. Our aim is simply to outline some fundamental principles in the learning process which have common acceptance. The following five principles will be considered: motivation, sensory perception, readiness, association, and repetition.

- a. Motivation. Motivation is the very heart of the learning process. Motivation is the why or the what that prompts a student to learn. It is the drive, the force, the stimulus that creates an awareness of the need for knowledge, and, without which, learning is impossible. Adequate motivation not only sets in motion the activity which results in learning, but it also sustains and directs learning. Motivation in learning is like the drive of appetite in sustaining life. One type of motivation stems from a natural desire, or craving, for knowledge. Curiosity itself is an innate stimulus. The captive German scientist, performing experiments in a Russian laboratory, may be indifferent to the politics responsible for his being in that laboratory. He is aware of one thing: as a true scientist, he is in search of knowledge; he is eager for further learning.

A need for knowledge is another effective motivating factor. Where the need is clear and understood, there is, in most cases, a great amount of learning. Self-preservation, for example, is a perfectly normal desire. In order to survive, a soldier, stationed in the

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Philippines, must obtain information on a band of Huks. His determination to survive intensifies his desire to know as much as possible about the recent movements of the Huks, their leaders, members, weapons, skills, and supply lines. His need for this knowledge is immediate; consequently, learning is greater. In the case of the soldier who is required to know about the Huks merely for information for some future discussion, or, perhaps, for passing an examination, the need is less urgent. His motivation is of a lesser degree; therefore, his learning is less intense.

A feeling of satisfaction and a sense of achievement are common and effective forms of stimulation. It is a common conviction that a realization of progress drives an individual to further effort. A rifleman who achieves success in a tight shot pattern is stimulated further to improve his skill with the weapon until he attains perfection. An excellent rating on the first week's work is a stimulus to greater effort during the second week, the third week, and so on, to the last week. It amounts, in brief, to the adage, "Nothing succeeds like success."

Other sources of motivation include rewards, praise, and the desire for social approval. Most men want to win the approval of friends and superiors. These may not be ideal forms of stimulation, but they do have value in promoting learning. The soldier is aware of the possibility of a promotion as a reward for solving a difficult field problem; the child is offered the prospect of a movie if he behaves well; some people are conscious of the element of "saving face"; and so on. Foreign cultures have influences unknown to most Americans. These motivations, embodied in the social structure of a people, must be understood and utilized by the instructor.

- b. Sensory perception. Sensory perception is the physiological factor in learning. Each individual is equipped with five important senses: sight, touch, hearing, taste, and smell. The poet, Milton, refers to them as the "five gateways of knowledge." All knowledge is based on this principle of sensory perception. A defect in, or the loss of, one of the senses will hamper learning to some extent, but the intelligent use of the other active senses can compensate for this loss.

- (1) Sight. The greatest amount of learning comes through the sense of sight. Everyone is aware of the vast amount of knowledge he has gained by reading, by observing the actions of people, by looking at pictures, illustrations, diagrams, animated cartoons, and even by observing the mountains and the sky.
- (2) Hearing. Impressions also come through the sense of hearing, and, as a result of the active use of this sense, many special skills are developed. The trained ear of the safecracker can

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detect the fall of the tumbler in the lock chamber; the sensitive ear of the communications man can determine the "fist" of the sender.

- (3) Touch. Another artery of knowledge is the sense of touch. Use of this sensory mechanism is evidenced by the skilled demolitions trainees who can feel the ribbing and distinguish between detonating cord and time fuse, and by the soldier who, feeling the impact of the rifle against his shoulder, learns the necessity for a solid position.
- (4) Smell and Taste. These are used in more specific learning. It is obvious that the baker, the chef, and the professional food tester rely on these senses to perfect their art. The chemist, especially, acquires much knowledge through taste and smell.

Since the senses are important channels to learning, it can be said that anyone who is concerned with learning--be it teacher or student--should appeal to as many senses as possible. If each of the five senses is capable of conveying impressions to the mind of the learner, it is logical to conclude that stronger impressions would be received if more than one sense-channel were employed. A student who has heard a teacher describe Niagara Falls has some information. His elementary knowledge can be supplemented by a film strip showing the falls. In addition to his having heard and seen the wonder, a boat trip through the mist completes a combined appeal to his senses, resulting in more permanent knowledge.

- c. Readiness. Readiness is another major factor in learning. This refers to the mental and physical state of the student, that is, the general tone or condition of the learner. Good learning cannot be forced. The trainee is said to be teachable when he is ready to learn. If the student is ill, he is not physically fit to learn, because his learning efficiency will decline. He may show a lack of interest because of a failure to understand the need for his learning. Other factors also interfere. He may be distracted from his work because of the hot, stagnant air condition in the room. Discouragement, poor health, fatigue, and other distractions are not uncommon to the learner. The subject, at times, will be difficult to learn. This is to be expected. If learning can be postponed until such time as these distractions or conditions have been eliminated, there will be greater understanding.

If a student experiences failure because of ill health, fatigue, emotional upset, or poor motivation, he frequently acquires a sense of inadequacy which, in turn, may lead to a complete dislike for learning. Attitudes and interests are damaged, and the process of understanding is thereby retarded or destroyed. In some cases, failure instills fear in the learner, and, although he may understand the need for knowledge, this fear is so great that little or no learning takes place. This emotional unbalance deters learning, and, until the stu-

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dent's attitude changes, little knowledge can be realized. Proper guidance and effective motivation are even more necessary at this time. In general, the factors leading to failure are the same for all peoples. Cultural patterns of other peoples, however, must be studied carefully, to avoid ineffective instruction caused by a disregard of their customs and prejudices.

d. Association. Association is the stepping-stone process in learning, by which new knowledge is built upon that which already is known. The old ideas are foundation blocks for new ideas. In order to learn algebra, the student draws on his knowledge of arithmetic. In a mapping problem, the student learns to determine magnetic azimuth. In order to do this, he employs his previously acquired knowledge of reading, direction, geometry, and arithmetic. In the learning process, this relationship is an important factor. The greater the tasks to be learned, the more learning takes place. The learner should be shown:

- (1) The relationship between the various points in a given period of instruction.
- (2) The relationship between present and past teaching in the subject.
- (3) The relationship between the current subject and others which have been, or will be, taught.
- (4) The relationship between the subject and its application in the field.
- (5) The relationship between the subject and the past experiences of the student.

e. Repetition. Learning may take place without repetition; frequently, however, in the case of developing a skill or habit, repetition is necessary. After the initial steps of learning have been fulfilled, repetition adds to the precision and permanence of the skill. Students learn by doing. (It can be mentioned here that a need for excessive drill may be an indication that the learning is above the student's level of ability, or that he is not ready to learn. This problem will be considered in a subsequent summary.)

To summarize, the learning process is a continuous activity of a living thing, the mind. Learning does not merely happen. It is the result of several fundamentals: motivation, sensory perception, readiness, association, and repetition. These can be either the source of new knowledge or contributing factors to the degree or permanence of knowledge.

It is important that those who will become instructors--as well as those who will become learners--be acquainted with these essentials. More im-

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portant, however, is that these principles be applied.

As an instructor in the field you will be expected to train men. You have faced problems previously which required you to analyze those problems and to adopt methods to solve them. This new problem of yours-- how to train men--requires a similar approach. Do you understand how men learn? Knowing the laws of learning is the first step in meeting your new problem. (Your questions will be considered during the scheduled class.)